Melanie N. Ott
6413 Sewells Orchard Drive
Columbia, Maryland 21045
(301) 286-0127 (W) (410) 381-0490 (H) (443) 538-4241(Cell)
email: melanie.ott@gsfc.nasa.gov, melanie.ott@bezant.net
http://misspiggy.gsfc.nasa.gov/photonics

Summary: Sixteen years of experience in the area of optics, photonics and fiber optics, thirteen years of experience pertaining to the development and reliability of space flight hardware systems.

PROFESSIONAL EXPERIENCE

2/00 - present ***Sigma Research and Engineering,***
Principal Electrical Systems Engineer, Contractor for NASA Goddard Space Flight Center

- Visible/UV Spectroscopy for solgel sensor and GLAST, IR spectroscopy.
- Lead engineer, optical fiber beam delivery system for MLA.
- Development, manufacturing, space flight environmental performance testing of 12 fiber ribbon assemblies for FODB, assemblies for VCL, GLAS, MLA.
- Radiation testing and modeling; scintillation and gamma ray radiation testing of optical fiber for GLAS, gamma testing of cables for FODB, ISS, NEPP, MLA, and Lucent. GSFC expert on radiation effects for fiber.
- Co-Inventor solgel sensor for biomedical applications, patent number 6,445,861.
- NASA Parts and Packaging Program:
  - Principal investigator researcher, reliability of optoelectronics for space with emphasis on packaging.
  - Development of innovative testing methods for optical modulators. Reliability assessments and testing for LED and laser diodes and fiber laser components. Testing and evaluation of optoelectronic packaging designs.
  - Environmental testing of components with in-situ monitoring and diagnostics for failure analysis.
- Authored 20 technical conference and NASA publications and presentations. Proposal writing for photonic systems in space flight applications, Received AETD Customer Service Award for External Support, 2000.
- For Sigma, Assembly of an LC interconnection manufacturing line and laboratory for Corvis transmitters.

6/96 - 2/00 ***Swales and Associates, Beltsville Maryland***
Senior Electrical Systems Engineer, Contractor for NASA Goddard Space Flight Center.

- Components engineering and program management for "COTS3" optocoupler radiation test board for the Space Technology Research Vehicle (STRV-1d).
- Principal investigator for a variety of NASA Parts and Packaging Program Tasks, technical direction of photonics activities. Assembly and development of the fiber optics characterization testing laboratory in Code 562.
- Development and characterization testing (thermal, vibration, radiation, etc.) of photonics and photonic packaging for Fiber Optic Data Bus (FODB), EO-1, MAP, GLAS.
- Assembly of an 248 nm excimer laser system for gamma detector fabrication for Code 661.
- Development, fiber optic Bragg grating vibration/strain sensing system for JWST.
- Authored 15 technical conference and NASA publications and presentations.

4/94 - 6/96 ***Unisys Government Systems, Lanham Maryland,***
Engineer Contracting to NASA Goddard Space Flight Center (GSFC).

Component engineering and quality assurance for fiber optic, interconnection, wire and cable for NASA and GSFC. Auditor of connector manufacturing plants. Creator of the NASA Parts and Packaging publication "EEE Links," 1995. International components committee standards chairperson. Electronic packaging researcher. Authored and coordinated EIA-710, Guide of Space Requirements for Electrical Connectors.

9/90 -10/93 ***NASA Langley Research Center, Hampton, VA, Graduate Researcher***

Developed a deformation sensing system for control of large space antennas and structures using coherent Moiré fringe multiplication with electronic phase detection. Published results in Masters thesis entitled *Incoherent Processing Moiré Contour Sensing with Coherent Processing for Large Structures.*

5/90 - 8/90 ***Crystal Physics Laboratory, M.I.T., Cambridge, MA, Research Engineer***

Investigated the use of barium titanate as a volume holographic memory device. Researched and experimented with extraction and poling of various doped barium titanate crystals. Published results for NASA and FEORC.

10/88 - 5/90 ***Fiber & Electro Optics Research Center (FEORC), Blacksburg, VA***

***Graduate Research Assistant*:** Research experiments included: infrared Mach-Zehnder integrated optic modulator for strain measurement system, design of fiber optic sensors for photo-copiers, Michelson based skin friction sensor for high velocity aircraft, optical fiber based ultrasound detection and the manufacturing of optical fiber based, extrinsic Fabry-Perot strain sensors, and optical fiber interconnects. ***Undergraduate Researcher*:** Optical fiber sensing to monitor structural vibrations.

EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg, Virginia

Masters Degree in Electrical Engineering 1993.

Bachelors Degree in Electrical Engineering 1989.

Howard Community College, Columbia, Maryland

Associates of Arts Degree in Engineering Science, 1987.

PRESENTATIONS, PUBLICATIONS, PATENTS, AWARDS

Some Publications and presentations available at:**http://misspiggy.gsfc.nasa.gov/photonics** or at **http://nepp.nasa.gov/photonics**

- *Optical Fiber Assembly Characterization for the Mercury Laser Altimeter,* Melanie Ott, SPIE Aerosense Conference, Enabling Photonics for Aerospace Applications V, April 2003.
- Patent 6,445,861 *Sol-Gel Processing to Form Doped Sol-Gel Monoliths Inside Hollow Core Fiber and Sol-Gel Core Fiber Devices made Thereby*, Harry Shaw, Melanie Ott, Michele Manuel, Sept 2002.
- *Radiation Effects on Commercially Available Optical Fiber*, IEEE Nuclear Science and Radiation Effects Conference, NSREC 2002 Data Workshop.
- *Recent Photonics Activities Under the NASA Electronic Parts and Packaging (NEPP) Program*, C. Barnes, M. Ott, A. Johnston, K. LaBel, R. Reed, C. Marshall, T. Miyahira, SPIE Vol. 4823, Photonics for Space Environments VIII, 2002.
- *Characterization of Twelve Channel Optical Fiber Ribbon Cable and MTP Array Connector Assembly for Space Flight Use*, Melanie Ott, Shawn Macmurphy, Patricia Friedberg, SPIE Proceedings Vol. 4732.
- *Fiber Optic Cable Assembly Characterization Studies at NASA Goddard Space Flight Center*, M. Ott, NEPP Workshop Presentation, Houston, TX 2002.
- *Characterization of Integrated Fiber Optical Modulators for Space Flight*, M. Ott, NEPP Workshop Presentation, Houston, TX 2002.
- *Tailoring Cores of Optical Fibers by a Solgel Method*, Harry Shaw, Melanie Ott, Michele Manuel, NASA Tech Briefs, Vol. 25, No. 1, Jan. 2001, p21a.
- *Capabilities and Reliability of LEDs and Laser Diodes*, Melanie Ott, What's New in Electronics, Vol. 20 N. 6, November 2000.
- *Technology Validation of Optical Fiber Cables for Space Flight Environments*, SPIE Proceedings Vol. 4216, Optical Devices for Fiber Communication II, Conference November 8, 2000, Boston MA.
- *NASA Goddard AETD External Support Customer Service Award, Sept. 2000.*
- *TID Radiation Induced Attenuation Testing at 1300 nm Using ISS Requirements on Three Optical Fibers Manufactured by Lucent SFT*, Melanie Ott, September 2000, Report to Lucent and NASA publication for Web.
- Patent application filed entitled *Sol-Gel Processing to Form Doped Sol-Gel Monoliths Inside Hollow Core Optical Fiber and Sol-Gel Core Fiber Devices*, filed August 2000.
- *Lossless 1X2 Optical Switch Monolithically Integrated on a Passive Active Resonant Coupler (PARC) Platform,* IEEE Photonics Technology Letters, Vol. 12, No. 7, July 2000, pp.840-842 S.S Saini, Y. Hu, F. G. Johnson, D. R. Stone, H. Shen, W. Zhou, J. Pamulapati, M. N.Ott, H. C. Shaw, M. Dagenais.
- *Characterization of Commercial Optical Fiber Cables for Space Flight Environments at NASA Goddard Space Flight Center*, presentation at the IMAPS/NEPP Advanced Technology Workshop, May 2000.
- Photonics Session Chair for IMAPS/NEPP Advanced Technology Workshop, May 2000.
- *Electron Induced Scintillation Testing of Commercially Available Optical Fibers for Space Flight*, M. Ott Proceedings of the IEEE Nuclear and Space Radiation Effects Conference Data Workshop, July 1999.
- *Assurance of COTS Fiber Optics Cable Assemblies for Space Flight*, M. Ott, Presentation to the Electronic Components for the Commercialization of Military and Space Systems Conference, Los Angeles CA, February 10, 1999.

- *Network Technologies Investigation NASA/GSFC High Speed Fiber Optics Test Bed*, Scott Thomas, Harry Shaw, Melanie Ott, Web publication available in the TVA library: http://misspiggy.gsfc.nasa.gov/tva/library.htm.
- *12 Channel Optical Fiber Connector Assembly: From Commercial Off The Shelf to Space Flight Use*, Melanie Ott, Joy Bretthauer SPIE Vol. 3440, Photonics for Space Environments VI Conference, San Diego, July 1998.
- *Fiber Optic Cable Assemblies for Space Flight II: Thermal and Radiation Effects*, Melanie Ott, SPIE Vol. 3440, Photonics for Space Environments VI Conference, San Diego, July 1998.
- *Assurance of COTS Optical Fiber Cable Assemblies for Space Flight*, Presentation to the Technologies Assurance Conference, May 1998, NASA Lewis Research Center.
- *COTS3 Photonics, Optocoupler Experiment on STRV-1d*, presentation to the Single Event Effects Symposium, Manhattan Beach CA. April 1998.
- *Fiber Optic Cable Assemblies for Space Flight II: Thermal and Radiation Effects*, Melanie Ott, presentation at the JPL Packaging Workshop January 1998.
- *On the Suitability of Fiber Optic Data Links in the Space Radiation Environment: A Historical and Scaling Technology Perspective*, Ken LaBel, Cheryl Marshall, Paul Marshall, Philip Luers, Robert Reed, Melanie Ott, Christina Seidleck and Dennis Andrucyk, IEEE Aerospace Conference, Vol. 4, pp. 421-434.
- *Fiber Optic Cable Assemblies for Space Fight: Issues and Remedies* M. Ott, J. Plante, J. Shaw, M. A. Darrin, AIAA/SAE World Aviation Congress, Oct. 1997.
- *Fiber Optic Cable Assemblies: Thermal and Radiation Effects*, Presentation to the Advanced Electrical Interconnection System Conference, Williamsburg, Oct. 1997.
- *Radiation Hardness of Optical Fiber*, presentation to the Space Parts Working Group, Sept, 1997
- *Reliability of Semiconductor Lasers and LEDs*, NASA Web Publication, 1997.
- *Fiber Optic Cable Assembly Qualification at GSFC*, Presented at the JPL Electronic Packaging Workshop, Pasadena CA, November 1996.
- Invention Disclosure filed with NASA for family of fiber optic sol-gel sensors, 1996.
- *Guide of Space Grade Requirements for Electrical Connectors*, Electronic Industries Association Publication, EIA-710, 1994.
- *Incoherent Projection Moiré Contour Sensing with Coherent Processing for Large Structures*, Masters thesis published by Virginia Polytechnic Institute and State University. 1993.
- "*Fiber Optic Displacement Sensors for Aircraft Skin Friction Measurements: a Feasibility Study*", coauthor on FEORC publication.
- "*Applications of Fiber Optic Sensors in Model Aircraft*" presention at the Fiber and Electro Optics Research Center Conference, Blacksburg, VA, April, 1989.

Under the publication *EEE Links*: URL address, http://nepp.nasa.gov/eeelinks/backissues.html "A Future for Plastic Fiber Optics," "Conference Report to the ISWG,"
"Two New Companies on the Cutting Edge of Fiber Optic Technology," Vol. 1, No. 1, 1995.
"The ISWG Information Exchange," Quarterly Column Vol. 1, No. 1-4, 1995, Vol 2. No. 1-3, 1996.
"Evolution of the MIL-STD-1773 Bus 20 Mb/s Protocol Chip," "Is Radiation An Issue for Fiber Optics?" Vol. 1, No. 2, 1995.

Under the publication *Space Parts News*, URL address, http://nepp.nasa.gov/eeelinks/spnintro.html

"Communication Channels Opened," "NASA ISWG Makes Progress," Vol. 8, No. 3, 1994.
"Conference Report to the ISWG," "A Channel to the World," "New Hybrid Wire," Vol. 8, No. 4, 1994.
"ISWG Information Exchange," Vol.8, No. 4 & 5, 1994.
"Optical Fiber Workmanship Standard," Vol. 8, No. 5, 1994.

PROFESSIONAL MEMBERSHIPS

OSA, SPIE, Society for Automotive Engineers (SAE) AE-8C1&2 (interconnection), AS-3 (fiber optics), GSFC Women's Advisory Committee, Chair of Diversity Dyanmics Subcommittee, Electronic Industries Association (EIA), Chair of Space Requirements Task Group (Interconnection), Telecommunications Industry Association (TIA) (Fiber Optics), F-22/RAH Fiber Optic Working Group, NAVWAG, IEEE.

LANGUAGES, SOFTWARE, ADDITIONAL TRAINING

Computer Languages and Software: LabView, FORTRAN, Pascal, Assembly, Basic, MATLAB, HTML, TCP/IP, CCD data imaging software, Web Server Security and Administration, , Software Installation on Sun Solaris. **Computer and Operating Systems**: UNIX v. 4, MS DOS, Macintosh, Windows 3, Win '95 & 98, Win NT, Linux. **Other Languages**: American Sign Language **Training**

Labview Basics 1 & DAQ Courses**,** *Reliability Through Environmental Stress Screening*, Unisys course, 1994, ISO-9000 training 1995, SPIE and OSA short courses: Reliability of Semiconductor Lasers, Optical Materials for Space, Photonics in Satellite Communications, Optoelectronic Packaging, LEDs and Lasers Reliability, IEEE NSREC Short Course 1999. **Instrumentation Knowledge**: Vytran fusion splicer system, OptoElectronics OTDRs, optical spectrum analyzers IR, spectrum analyzers UV/VIS, spectrum photometer, Power meters, tunable sources, microscopes, function generators, oscilloscopes, class IV laser systems, termination equipment, launch condition analyzer, photon counter with monochromator, vibration shaker, thermal chambers, etc.

RERFERENCES AVAILABLE UPON REQUEST.